Spring 2015

Permanence and Picnic Tables Perceptions of Maji Safi Group’s Disease Prevention Center at Shirati KMT District Designated Hospital

Sarah Muskin
SIT Study Abroad

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Permanence and Picnic Tables
Perceptions of Maji Safi Group’s Disease Prevention Center at Shirati KMT District Designated Hospital

Sarah Muskin
SIT Study Abroad: Tanzania Wildlife Conservation and Political Ecology
May 4th, 2015
Acknowledgements

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Finally, I would like to thank my parents and family. I am so grateful to have had the privilege to travel to this country for a semester to learn as much as I have. Thank you too for never complaining that I only ever called when something was challenging or going wrong. And though you are miles away, I would not have been able to get through these months without you and all of your support.
Abstract

This study conducted in Shirati village in the Rorya District of the Mara Region of Tanzania analyzed perspectives on the effectiveness of Maji Safi Group’s Disease Prevention Center at Shirati KMT District Designated Hospital. It took place from April 9th- 24th 2015. The sample frame was those affiliated with or using the Disease Prevention Centers resources. The sample populations were medical professional employed at Shirati Hospital (n = 15), Community Health Workers (n = 11) (CHWs) working for Maji Safi Group, and visitors (n = 113) to the Disease Prevention Center. This study utilized three main methods for data collection: 1) key informant interviews with medical professionals at Shirati Hospital; 2) key informant interviews with CHWs as well as participant observation at the Disease Prevention Center during it’s functioning hours (n = 20); and 3) verbal questionnaires completed by 62% of the 181 visitors to the Disease Prevention Center over 8 days. This data was analyzed using descriptive statistics. Results indicated that medical professionals recognize the need for Maji Safi Group to exist due to their lacking preventative medicine care at the hospital and appreciate the work done at the Disease Prevention Center, CHWs love and are proud of their jobs at the center, and visitors appreciate the center and learn the lessons well. Visitors further have intentions to increase disease prevention practices after having visited the Disease Prevention Center, but the actual application of these strategies can be inhibited by poverty, access to WASH materials, or lack of education. Maji Safi Group is trying to combat the lack of education by empowering locals to take prevention of water-borne diseases seriously. There are many positive views of the center and many requests for Maji Safi Group to extend their programs, but what the findings of this study ultimately showed is that to legitimately gauge and increase the effectiveness of the center, Maji Safi Group must become a permanent movement in Shirati.
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Introduction

Background: The terms healthcare and public health are buzzwords relevant to issues any place in the world. Building a healthcare infrastructure that is functional, provides adequate care, meets demand and promotes a health oriented and educated community is critical in order to increase quality of life for the global population. In countries like Tanzania, with comparatively less political, and economic infrastructure than most, providing basic healthcare amenities is more difficult and rare. These less developed countries also often happen to be areas with the highest risk of health related problems due to environmental public health hazards.

Tanzania is currently ranked 159th out of 187 countries on the United Nations Human Development Index, which takes life expectancy, education levels, and income per capita, all factors of a country’s healthcare status, into account (UN Human Development Report, 2015). The country had a population of 49.2 million as of 2013 and that number is rapidly growing (UN Human Development Report, 2015). In fact as of 2025, the population of the country is anticipated to have doubled, which will only increase the present strains on the population’s health, and health care, along with food security, and environmental well-being. Tanzania is one country where health care on a whole does not meet demand for a variety of reasons: the government only spends 11.1% of its total expenditure on the health sector, as of 2006 the density of physicians per 1,000 people was .008 (WHO report, 2015). Further, when development projects are implemented, they often focus on facility based projects instead of possibly improving the effectiveness of the existing healthcare system or increasing the implementation of disease prevention practices (WHO report, 2015; Perel-Slater pers. comm. 2015). According to the latest World Health Organization (WHO) report on Tanzania, Tanzanian citizens are individually only spending 7.3% of their already very low gross national income per capita, of $1,702 as of 2013, on health care (UN Human Development Report, 2015). Spending more at this point though is out of the question as individuals do not have that sort of income and the health providers generally do not have the capacity to see more patients or provide more care than they currently are. Therefore, improving health in a country like Tanzania must be looked at from a variety of perspectives.

As is the case in many sub-Saharan African countries, many health issues and illnesses spread and are contracted because of environmental factors like unclean water, livestock carrying diseases, or hygienic reasons. Further, transportation to the healthcare available can be strenuous
and in economical impoverished areas, hospital visits may be too expensive for many families to afford. For this reason a shift to a larger public health focus is critical to prevent diseases and health issues. One example of a preventative illness practice that could be implemented by governmental authorities could be to create or improve sanitation facilities. Another such method toward disease prevention could be the usage of community health workers, CHWs, to educate the masses or provide basic care for the country’s citizens.

In most cases CHWs are members of the communities where they work and although they do not have a professional health care certification, they provide basic public health services in their community including educating locals about health risks, promoting healthy behaviors, or connecting locals with formal health care facilities (Pallas, et al., 2013). CHWs can frequently be volunteers, but also hold paid, or compensated positions as well. CHWs have the unique ability to be able to connect and work with locals at a low cost. Therefore the use of CHWs has rather successfully been deployed in order to achieve disease prevention and health system strengthening around the world. (Pallas, et al., 2013) CHWs can take many approaches to their work, but one of the most widely used purposes for CHWs is health education and outreach. This type of preventative medicine is a promising tactic when it comes to improving health in a place like Tanzania. In fact, community health workers are supposed to be a part of local governments in Tanzania, but are often absent (Perel-Slater pers. comm. 2015). The fact that the government is either unable to, or simply choses not to place competent people in these critical positions all the time, only adds to the gaps in the country’s health system.

According to the most recent WHO country report, “the health status of the Tanzanian population has continued to improve in recent years” (WHO report, 2015). Although this trend looks hopeful, the country still faces drastic health concerns that cannot be shaded by slightly decreasing numbers of disease mortality cases. In 2012, the average Tanzanian life expectancy was 61 and the statistics showing other health risks, or causes of death in Tanzania depict a bleak scene of health. Some examples of these statistics from 2012 are: the under age five mortality rate was 54 per 1000 births, 5% of the population between the ages of 15 and 50 had HIV and there were 7,820 reported and confirmed deaths due to malaria with 1,986,955 reported and confirmed cases (WHO report, 2015). These sobering numbers could be due to the fact that as of 2011, only 53% of the population was using improved drinking water sources, and just 12% was using improved sanitation facilities (WHO report, 2015). Diseases such as measles, leprosy,
tuberculosis, and cholera have also been shockingly prevalent in recent years with outbreaks all over the country (WHO report, 2015). Clearly, in a place like Tanzania, alternative approaches must be considered and implemented in regards to health care and disease prevention, instead of solely focusing on building health treatment facilities. The current strategic agenda developed by the WHO to tackle health issues begins with the goals of “strengthening capacity of health systems and services, scaling-up health service delivery, community-based health services and health promotion, supporting the reduction of maternal, newborn, and child mortality,” and finally “supporting the country to combat communicable and non-communicable diseases” (WHO report, 2015). Although these five goals should lead to improved healthcare infrastructure, their implementation can be abstract, very difficult given the limited resources available to work with in Tanzania, and problematic to measure. Nevertheless, the approach toward medical treatment of improving capacity and quality of treatment at the already existing health centers- as stated in the first goal, coupled with preventative medicine efforts is critical to improve the quality of life in this country.

**Study Purpose:** All of the aforementioned factors including environmental public health issues, impoverished rural communities, the usage of CHWs and a governmental hospital are present in a northern Tanzanian village called Shirati. This study looked at perceptions of a public health outreach program run by an NGO called Maji Safi Group called the Disease Prevention Center at Shirati Hospital and if those involved think that disease prevention practices are increasing on account of the center. The primary sources for this study were Maji Safi Group’s community health workers, various health professionals at Shirati Hospital, and patients and visitors to the Disease Prevention Center. All three groups were asked about their experiences with this center and disease prevention in general, and the health professionals and community health workers will be key informants on the workings of the hospital and the center, and how the two establishments work towards the goals of preventative medicine in Shirati. The results of this study helped to give insight on the views of perceived effectiveness of the center. Further, this study holds the different sample populations’ suggestions for changes to be made to the Disease Prevention Center’s practices, resources, and policies to increase local public health practices and education.
Site Description

Figure 1. *Shirati in Africa* The above image is a map provided by “The Friends of Shirati” on their website. The country highlighted in orange is Tanzania, and Shirati is located right on the coast of Lake Victoria.

Figure 2. *Mara Region in Tanzania* This map of Tanzania is from the “Mara Survey” (http://everytongue.co.uk/habarizamark/images/picture/Mara%20Survey%201.jpg). The area circled in red is the Mara Region and towards the north along the boarder of Kenya is the Rorya District, in which Shirati is located. To look at a more detailed map of the Rorya District, see Appendix 4.
Shirati is a rural community in Northwest Tanzania comprising of a group of 3-4 wards of villages. It is located about 15 km from the Kenyan boarder and on the coast of Lake Victoria. The area is in Rorya District of the Mara region of Tanzania. The Rorya District comprises of about 250,000 residents (Maji Safi Group, 2015). Many of these residents are of the Luo ethnicity, and the primary languages are Kiswahili and Kiluo. The majority of the population practices Mennonite Christianity, with a Catholic presence as well. The population in Shirati is primarily a group of subsistence farmers and fishers.

Like the rest of Tanzania, there are two seasons of rain in Shirati, each followed by long dry periods. For this reason, irrigation is a main challenge to the agriculture of this region. Further, water is always taken directly from Lake Victoria or other unprotected sources, which are nearly always filled with vectors or bacteria that transmit water-borne diseases. It is predicted that about 50% of the patients that local health care professionals see in Shirati are sick because of water-borne illnesses (Maji Safi Group, 2015). For a district of this size, there is an incredibly low number of governmental health officers: twelve (Perel-Slater pers. comm. 2015). These twelve officers are responsible for a whole host of responsibilities including enforcing health laws, like proper waste management, and facilitating access to health education and health care. With so few of them in the district, along with the lack of safe water, it is no wonder the district designated hospital is overcrowded with patients.

Shirati KMT District Designated Hospital, located in Shirati, services the health needs of around 250,000 people ranging from all over the district and region. The hospital was founded in 1934 with help from the Tanzania Mennonite Church and is now monetarily supported primarily by the Tanzanian Government, charitable organizations such as Friends of Shirati, and other donations. The hospital is home to 205 employees, with three doctors, five assistant doctors, ten clinical officers, and sixty-nine nurses of different levels (Ngugi pers. comm. 2015). There are family planning programs, cancer-screening programs, a very active CTC center including HIV counseling, there are two ambulances and three operating rooms (Ngugi pers. comm. 2015). The hospital has an X-ray machine, ultrasound, a physical therapy unit, four lab technicians of different levels and five inpatient wards (Ngugi pers. comm. 2015). Shirati Hospital is even able to process it’s own IV solution and pumps its own water from the lake. Although there are other nearby health centers, Shirati is the biggest hospital in the district, and provides the best health care in the region with its good technology, facilities and staff. Despite the hospital’s well-
trained staff and relatively high-tech equipment, there is still much lacking in regards to capacity, and medications and treatments available. Currently, the hospital is hoping to expand its pediatrics ward, along with hoping to increase the amount of clean drinking water they can provide to their patients, but are in need of financial support to do so (Nurse #1 pers. comm. 2015). In total the hospital has just 160 beds; eighteen beds each the male and female ward, twenty-five in the children’s ward, and others in private rooms or offices (Ngugi pers. comm. 2015). For the amount of patients the hospital sees, this is not enough. In 2014, there were 9,376 in-patients admitted, and a total of 16,720 outpatients treated. That leads to a total of 26,052 patients in one year with only three medical doctors in the entire hospital (Ngugi pers. comm. 2015). When I arrived at the hospital I noticed lines of people waiting to get in, and the wards were full or overflowing. Curative treatment is stretched thin enough, and further, despite the fact that four of nurses I completed key informant interviews with mentioned they need to give disease prevention education, three of them reported that they and their colleagues feel as if they are unable to effectively complete that task, as they do not have enough time or staff to manage the overwhelming numbers of patients (Nurses #3,4,5, and 7 pers. comm. 2015). If both curative medicine and preventive medicine are truly being stretched to a breaking point at Shirati Hospital, the health of the district will continue to decrease especially as the population rises. This is a horrible trend considering most prevalent diseases in the region such as schistosomiasis, malaria, and typhoid are relatively simple to prevent if residents are aware of critical disease prevention practices (Michael pers. comm. 2015).

Maji Safi Group is an NGO located in Shirati. It “is a disease prevention and health promotion project that empowers communities in rural Tanzania to fight waterborne and water-related diseases” (Maji Safi Group, 2015). The group helps to prevent disease by teaching locals basic disease prevention strategies such as hand washing techniques, the proper use of latrines/waste disposal, the importance of boiling, treating, or filtering water, how to recognize diseases, and how to wash and preserve food. It began to train its first employees in Shirati in 2012, and now has official NGO status in the USA as well. Maji Safi Group aims to reduce the number of locals needing healthcare through education, outreach, and provision of equipment like water filters to the hospital. There are many Maji Safi Group disease prevention programs in place in the community right now ranging from art after school education programs, to net-ball tournaments with health lessons beforehand. Maji Safi Group currently employs 13 community
health workers, or ambassadors, as they are also sometimes known as, an art coordinator, and a Swiss development worker on site in Shirati. The community health workers are not health are not professionals and instead are community members who were trained by Maji Safi Group originally, as well as by the WHO in “Child Hygiene And Sanitation Transformation” and “Participant Hygiene And Sanitation Transformation” methods (Perel-Slater pers. comm. 2015). The majority (ten) of the community health workers are women as Maji Safi is a strong believer in empowerment. The community health workers serve a lot of roles from helping to run these outreach programs, conducting home visits, and simply being ambassadors in their community.

Disease Prevention Center is one of Maji Safi Group’s outreach programs. The center is located at the Shirati KMT District Designated Hospital and has been open and running since 2012 as one of Maji Safi Group’s first three programs. It is open for between the hours of 12:00 and 2:30 five days a week during the hospital’s visiting hours. Every day two of Maji Safi Group’s community health workers run the center and teach public health lessons to drop in visitors. The lessons range from how to treat water, to information on fecal/oral diseases to hand washing, just to name a few (Laila pers. comm. 2015). On average there would be around six to eight drop in visitors per day, although recently these numbers have been rising (Saba pers. comm. 2015). The Disease Prevention Center has changed over time in addition to the rising number of visitors. The location of the station has switched many times, and originally, lessons would be taught based on the diseases a visitor had experience with (CHW #5 pers. comm. 2015). Sometimes the CHWs would give demonstrations too. Now, it’s a bit more fluid, the lessons really are conversations between CHWs and the visitors, and generally one lesson theme will be taught for a week or two before changing (Perel-Slater pers. comm. 2015). As this center has consistently evolved, Maji Safi Group is always looking for way to improve its outreach and effectiveness.
Methods

This study occurred between April 9\textsuperscript{th} 2015 and April 24\textsuperscript{nd} 2015. It used a variety of methods to examine the study question stated. The sample frame was those affiliated with or using the Disease Prevention Centers resources. The sample populations were Maji Safi Group’s community health workers (CHWs), patients/center visitors, and various doctors, and Maji Safi Group executives.

I interviewed eight key informant doctors in order to obtain information about disease prevention practices at Shirati Hospital overall, and to gain insight as to how they as critical hospital employees view the Disease Prevention Center. I also interviewed seven opportunistically selected hospital employees and nurses to get further professionals’ perceptions on the effectiveness of the Disease Prevention Center, Maji Safi Group as a whole, and disease prevention in the area (See Appendix 1). These interviews were all treated as key informants, but certain interviews were longer than others based on the subjects knowledge of Maji Safi and the Disease Prevention Center. In addition, I also interviewed one Maji Safi Group executive and obtained pertinent information from the past two years of the Disease Prevention Center operating from him.

Participant observation was also a large component of this project. I spent eight days in the Disease Prevention Center during its working hours of 12:00-2:30 with the community health workers and my translator (n = 20 hours). I watched lessons, observed visitor CHW interactions, and was able to interact with both visitors and the two CHWs intently. From these hours I gained an understanding of how the Disease Prevention Center functions and also collected data from interviews with visitors and CHWs.

I used opportunistic non-random methods in order to conduct my interviews of center visitors, as each Disease Prevention Center visitor was given the option to participate in an informal survey interview conducted by either the Maji Safi Group community health workers, or my translator after his or her visit and lesson. The questionnaire was spoken in order to allow for clarity with questions, and for non-literate people, or those who only speak Kiluo, to be able to participate. The questionnaire was brief, and the participant was allowed to choose to terminate involvement at any point in the interview (See Appendix 3). In compensation for completing the survey, each participant was given two sheets of “Waterguard,” pills that treat water and make it safe for drinking. These verbal questionnaires were important to gain a sense
of how visitors receive the information provided by the center. Further, the responses helped to
give light to the question of if perceptions from CHWs and others about the center’s impact align
with what visitors experience, and in visitors at least plan to implement disease prevention
practices.

A major bias that impacted this study and its results of this study is the fact that on April
9th a case of cholera was confirmed by the local government in the district, and an outbreak was
declared on April 13th. This occurrence could have definitely affected views on public health and
health education of the region, which Maji Safi Group and its Disease Prevention Center are
intrinsically involved in. Further, the Maji Safi Group CHWs were busier and travelling for
outreach to the heavily afflicted area of cholera everyday. For more information about cholera in
Rorya District in 2015, see Appendix 4. The thirteen CHWs were vital resources for this study,
but I was able to only briefly interview seven of them because of cholera. The other four I was
able to informally yet comprehensively interview them to pair with participant observation at the
Disease Prevention Center (See Appendix 2).

To analyze the data this study uses descriptive statistics.
Results and Discussion

As there were three very different sample population used to complete this study, contacted in different settings with different methods implemented, the results are initially segmented into positive responses about both Maji Safi Group and it’s Disease Prevention Center from the medical professionals, the community health workers, and Maji Safi Group center visitors. Next, the results will continue to be sectioned by sample populations, but instead describe suggested improvements for, or critiques to the Disease Prevention Center. One thing to note is that both the medical professional and CHW sample populations were extremely familiar with Maji Safi Group’s presence in the Shirati area. For this reason, when I interviewed these populations, it was hard to distinguish in conversation between perceptions of the Disease Prevention Center specifically, and Maji Safi Group as a whole. Therefore, many responses touched on both the NGO and the specific Disease Prevention Center program, and in some cases were used interchangeably in the results.

Medical Professionals As mentioned, there are only three medical doctors in all of Shirati Hospital, but clinical officers and oftentimes other managerial employees will refer to themselves as doctors. Because of this structure, it was frequently difficult to distinguish exactly whom I was interviewing, especially since the majority of the fifteen hospital employees were able to be interviewed in English, but the Tanzanian medical degree system is hard to explain in this language. Regardless, it was possible to tell the difference between the seven nurses I saw, and the higher-ranking medical practitioners, especially because there was a major difference in answers to my questions about disease prevention practices in Shirati Hospital.

The main difference in nurse and doctor responses that is pertinent to this study is how they see disease prevention practices employed in this hospital. While the eight doctors often launched into talking about the most prominent diseases they see, how their department works, or how they practices hygienic medical treatment, as soon as the nurses understood what was being asked, they stated that for each patient they treat in the hospital, they are supposed give at least information, if not a full lecture about disease prevention. When patients come to the hospital, they are unaware about diseases and how illnesses are transmitted, each nurse though is supposed to teach patients basic health practices ranging from hand washing to HIV prevention (Nurse #3 pers. comm. 2015). As preventative medicine saves money and lives, and is more cost
effective opposed to curative medicine, this policy, in theory, is beneficial for both patients and the hospital. The problem is though that nurses don’t have enough time to effectively provide health education with the amount of patients they are responsible for caring for everyday, let alone have time to give health education at all (Nurse #2 pers. comm. 2015). The hospital is incredibly busy and overcrowded, so it is completely understandable, as an observer, that too much is expected of the sixty-nine total nurse practitioners. It is no wonder health education falls to the wayside from the perspective of many of the nurses, as they have other important parts of their job to complete everyday. None of the doctors I interviewed even discussed this preventative medicine education is supposed to occur. Further, not one of the Disease Prevention Center visitors mentioned anything about having received any education while in the hospital, even though approximately 27% of the 113 visitor responses I collected was either sick in the hospital, visiting the clinic, or giving birth. Some nurses still believe that the limited education they are able to provide is worth it. For example, if one patient is interested in listening about preventative medicine practices, they may teach what they learn at the hospital to their friends and family in their communities around the region (Nurse #3 and #4 pers. comm. 2015). In fact, over the past five years the number of dysentery cases the hospital receives has decreased drastically, and the head nurse of the male ward at Shirati Hospital believes this is due to the hospital’s disease prevention initiative combined with work from NGOs like Maji Safi (Nurse #4 pers. comm. 2015).

One thing that was made clear from the interviews I conducted with medical or clinical officers is that because this hospital is so busy and limited for resources and time to see patients, there is a bigger focus on curative medicine, as people are already sick and need immediate attention (Machagge pers. comm. 2015). The hospital does provide preventative medical services, in addition to the supposed health education from nurses, in the form of the CTC (HIV) center, a mother/child clinic, high quality cancer screenings, and malaria intervention initiatives (Flammer pers. comm. 2015 and Machagge pers. comm. 2015). And these medical centers provide services that are perceived by more than half of the sample population of medical professionals to successfully reach over half of the patients they serve. But the hospital is still receiving more sick people than it can handle often due to the fact that people are not taking proper precautions to preserve their health (Aloo, Katono, Makorere, Michael, and Nurses #3, 4, 6 and 7, pers. comm. 2015). One response that was received from almost all of the fifteen
members of the hospital’s medical team I interviewed was that they emphasized what a bad area Shirati and the entire Rorya region is for water. Although I have already mentioned the lack of running water in most of the region, and the fact that essentially all the water gathered contains some sort of harmful bacteria in it, it is still note-worthy that hospital staff highlights this point, as it is an indication of the high-rate of water born illnesses at the hospital. In fact, over 50% of the male ward patients were reported to have been admitted due to schistosemiasis complications, which is a water-borne disease, and illnesses such as cholera, for example, would not exist if proper water-treatment practices and latrine usage were more common (Machagge pers. comm. 2015).

Learning about these instances of idealistically easy to prevent waterborne diseases being prevalent at Shirati Hospital, emphasized that hospital workers acknowledged that for the most part, the hospital is not succeeding in promoting public health in Shirati. Therefore, it was interesting to see what the medical professionals thought of an organization like Maji Safi Group stepping in to try and fill the realistically unfilled niche of disease prevention education in the area. Overwhelmingly, responses to questions about Maji Safi Group were positive from both doctors and nurses. Six of the eight doctors had some reservations towards the group’s effectiveness, which will be discussed later on. But in general, the hospital seemed to receive Maji Safi Group well based off of the fact that Maji Safi Group was allowed to set-up their Disease Prevention Center by the hospital, and there were many positive responses towards mentioning the organization. The health professional sample population especially appreciated the Disease Prevention Center, and the water filters that Maji Safi Group had provided to many of the wards.

When the nurses were asked about Maji Safi Group and the Disease Prevention Center, a common immediate response was mentioning that as nurses they would love a job with the organization. These responses allude to the positive reputation the organization has for valuing their community health workers as employees and potential change makers in their communities. Nurses also commented on the fact that they think Maji Safi Group’s home visit program is excellent, and the group is essential towards health and water safety promotion in Shirati (Nurses #3 and 5 pers. comm. 2015). In regards to the Disease Prevention Center specifically, nurses perceived that the center can be effective in that individual education often makes change even if change comes slowly. Six of the seven nurses stated that people actually go to the center and
seem to enjoy talking, learning, and receiving pamphlets and other tangible information from the CHWs. This is a very positive impression of the center, as it shows that the center interests and engages its audience.

The eight medical and clinical officers interviewed perceived that Maji Safi Group is an essential organization that works tirelessly. All of these subjects had positive things to say about the center including almost all the factors that the nurses mentioned. The higher-ranking officials also mentioned that the center sends a message about water treatment to not just the local community, but also to communities around the district since many patients or visitors travel quite a distance to reach Shirati Hospital’s high quality health care (Aloo, Machagge, and Michael pers. comm. 2015).

From the fifteen key-informant interviews, I learned that the hospital struggles to provide disease prevention practices that it intends to implement and that partially because of this failure, preventable diseases, especially waterborne diseases, are hugely prevalent in Shirati Hospital. As the medical professionals know about Maji Safi Group and its Disease Prevention Center as well as preventative medicine practices, it was useful to understand what nurses, and medical and clinical officer thought about what the Disease Prevention Center does well. Overwhelmingly, this sample population had positive opinions on the center, but was also able to point out areas for improvement to be discussed later on. To further evaluate the Disease Prevention Center’s perceived effectiveness, I needed to talk to the community health workers that run it, and see how the center functions on a daily basis.

*Community Health Workers* From the twenty hours I spent at the Disease Prevention Center, during the twenty-two and a half hours it was running during my time in Shirati, I observed and recorded qualitative data that gave me an idea of how the center operates on the ground. When visitors arrived at the center during the two weeks of participant observation, the lessons being taught were centered on cholera. Visitors learned about proper ways to treat their water, wash their hands, use latrines, and general fecal/oral disease prevention practices. Plenty of visitors were swayed to stop by the center due to beckoning and welcoming, but some walked right over to learn. Others tried to listen without being involved until one of the Community Health Workers (CHWs) began involving them in conversation. In general, the information being given was received well. During the observational period of this study, I overheard and
learned from my translator that many visitors had no idea that cholera was in the district. Further I noticed people stating that they had not previously been boiling their water, and one even admitting to not having a toilet. Because of the cholera outbreak, people appeared very keen to listen to the information being given and passed out in pamphlets. Visitors further seemed to like the way they were approached by Mwamvua and Aska, the two CHWs I primarily saw in action. There was a certain respect I noticed between each party, and there did not seem to be a noticeable power dynamic based on knowledge or any other factors, which may facilitate education through an open exchange. CHWs noticeably took a lot of pride in their work through the professional manner in which they conducted themselves during lessons, and by good times we shared during their working hours.

100% of the eleven CHWs I interviewed stated that the work they do at the Disease Prevention Center is critical and excellent. To take a different approach to why they perceive their work to be this way I asked why they like their jobs with Maji Safi Group, and why they think that their friends and families like that they work for Maji Safi Group. All of the CHWs were able to list at least two reasons about why they enjoy their jobs. The below tables show these responses.

<table>
<thead>
<tr>
<th>Top 4 reasons CHWs like their job</th>
<th># of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Teaching</td>
<td>8</td>
</tr>
<tr>
<td>2 Being a change-maker</td>
<td>5</td>
</tr>
<tr>
<td>3 Personal education</td>
<td>3</td>
</tr>
<tr>
<td>4 Variety of programs</td>
<td>3</td>
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<tr>
<th>Top 4 perceptions of peers’ opinions</th>
<th># of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Family and friends learn through them</td>
<td>7</td>
</tr>
<tr>
<td>2 Viewed as change-maker</td>
<td>6</td>
</tr>
<tr>
<td>3 Can get Waterguard from them</td>
<td>3</td>
</tr>
<tr>
<td>4 Family acknowledges and enjoys better pay</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 1. Positive impressions of community health workers’ (CHWs’) jobs The top four responses to two questions asked during the month of April 2015 in Shirati, TZ from eleven out of thirteen Maji Safi Group CHWs about why they and their family enjoy their job as CHWs are shown above. All of the CHWs had more than one response to each question, which is why the number of responses exceeds the sample size.

Although these lists have no indication on the perceived effectiveness of the Disease Prevention Center specifically, they do reveal that CHWs view themselves as community change-makers, as do their friends and families. In fact 82% of the eleven CHWs mentioned being a change-
maker at some point in their interviews. Considering themselves to fill this role does have some bearing over whether or not the CHWs think they are impacting people. The results above indicate the CHWs do believe that their work is important, is making a difference, and to an extent is effective in changing community and individual behaviors and increasing disease prevention practices, which are taught at the Disease Prevention Center.

Center Visitors During the eight consecutive days I observed the Disease Prevention Center the community health workers were teaching about cholera. This added a level of control to questionnaire responses, as in theory each center visitor would learn the same sort of information. Out of 181 visitors over eight days, I received 113 responses to the spoken questionnaire: a 62% response rate. This percentage was not entirely representative of my time at the center though, as on the first day the center received fifty-five visitors, likely on account of the cholera outbreak. This number of people is much more volume than my translator was able to interview. With the first day of participants excluded (95 responses out of 126 visitors), the response rate to the visitor questionnaire was a 75%, which seems much more accurate to what was experienced. Because of this high percentage of participation, the visitor sample population specifically will be viewed as a representative sample of the visitors at the Disease Prevention Center during the dates of this study.

Men and women of all ages at the center for the most part seemed to truly engage with the CHWs or at least listen and absorb, as you could tell from the way people on the outskirts would creep closer to hear what was going on. Another reason why people may have been so interested in listening is because all visitors were at the hospital for a reason, either they were sick, family members were sick, they were seeking health education, or they were employed there. With health issues on their mind, the Disease Prevention Center seems relevant to visitors, and it appeared to receive a good audience. The difficulty though is determining whether or not the lessons taught at the center stick with people enough to change their lifestyles.

One way to evaluate what impressions of the center were, visitors were asked if they would return to visit for another lesson and why. Only one out of 113 said they would not return to the center if given the chance. The rest were allowed to freely respond as to why they would want to return and many answered multiple reasons. For that reasons the percentages shown on the below figure exceed 100%.
As is evident from the above figure, 73% of the visitors to the center plainly stated that they believe the lessons the center offers are great. All the other reasons listed for visiting the center again shows that visitors seemed to believe the center is offering a valuable service, and doing a good job at providing that service. Further, 75% of the visitors mentioned in some context that they wanted Maji Safi Group to continue education the way they are doing it at the Disease Prevention and add more centers around the district. All of these above results exemplify the positive reputation the Disease Prevention Center brings itself.

When center visitors were asked if they were planning on implementing disease prevention practices they had just learned, 100% the sample population responded yes. This may indicate a willingness or receptiveness to the education they had just received. The follow up question was for visitors to explain how they would change their daily habits to incorporate disease prevention strategies. These responses more showed what visitors learned and retained in
their lessons. The below graph depicts different water safety, sanitation, and hygiene habits and the percentage of visitors said they would add these habits to their daily lives.

Figure 4. Visitors’ planned disease prevention behavioral changes. From 113 Disease Prevention Center visitors who responded to this study’s questionnaire between April 13th and April 24th, 2015 at Shirati Hospital, the above chart represents the percentages of those who stated they would add specific disease prevention practices to their daily activities on account of the lesson they received. Visitors were allowed to freely respond to this question, and many had more than one response, so the percentages do not add up to 100%.

Although this figure gives no bearing on whether or not these disease prevention strategies would truly be put into practice at home, it still can show that visitors are learning and retaining the information that the CHWs give them. Simply getting the information out into the district is something the area really needs based on what medical professionals at the hospital were reporting, and the general health and education statistics of the area. Therefore this data definitely indicates that the Disease Prevention Center can be considered successful in the fact that the education, the lessons and the public health messages it is providing are received well by visitors to the center.

*Medical Professionals* Though the results from this study made it clear that Maji Safi Group and it’s Disease Prevention Center have a positive reputation in Shirati, each study sample
population also had suggestions on how the center could increase the actual implementation of
disease prevention practices and therefore be perceived as more “effective” in actually changing
preventative health practices for the better. The hospital worker sample population was full of
suggestions. Some of the responses to this question from both medical/clinical officers and
nurses included: the CHWs should visit different wards and patient areas of the hospital, Maji
Safi Group should hire a medical professional to be a reference for CHWs and add a level of
credibility to the organization, Maji Safi Group should continue to grow as well as spread to
other health centers in the area, and that it would be great if Maji Safi Group could supply more
water filters and containers to the hospital (Aloo, Michael, Nurses #1,2,4, and 5, pers. comm.
2015). These suggestions were not all specifically for the Disease Prevention Center, and some
like supplying more water filters do not necessarily align with Maji Safi Group’s philosophy of
empowering people to take disease prevention into their own hands. But the responses are still
interesting as they provide information at what health-care providers think is lacking in the
effectiveness of the center and the hospital’s health education program as well.

Both the doctors and the nurses were asked about Maji Safi Group and the Disease
Prevention Center during the second half of their interviews. Nurses were able to discuss Maji
Safi Group for about an average of ten to twenty minutes, whereas the medical or clinical
officers were more interested in talking about their own work. One trend that can be drawn from
this was that it seemed as if the nurses knew a bit more about Maji Safi Group programs than the
medical or clinical officers did. This might be because nurses move around the hospital more
during the Disease Prevention Center’s working hours. It could also be because the CHWs have
worked more closely with nurses and completed more home visits with them. A final reason for
this trend could be that it is not the doctors’ job at this hospital to provide health education the
way it is for the nurses, so nurses take an interest in those attempting to complete a similar task.
Regardless, this did not inhibit the higher-ranking medical professionals from having opinions
and impressions of Maji Safi Group and specifically the Disease Prevention Center.

These eight higher ranking medical professional subjects were not shy about suggestions
for the Disease Prevention Center though, possibly because Maji Safi Group is still a young
organization in the region and the Disease Prevention Center has changed a lot in its past three
years of operation. As stated, the responses all overlapped greatly with the same suggestions the
nurses had, but there were two outlier responses from medical officers/assistant medical officers
about how the Disease Prevention Center could improve. The first was that the center needs a designated place in the hospital with a sign to tell visitors and those who pass the umbrella and picnic-table stand that Maji Safi Group is being represented and providing critical health information (Flammer pers. comm. 2015). This suggestion came from a foreign doctor who had only been in Shirati for a few months, so she had a fresh set of eyes to notice the non-permanent appearance of the center. The second outlier response came from an assistant medical officer who had worked at the hospital for twenty-five years. He stated that he had seen projects, volunteers, and organizations come to the hospital and fall out or leave over time and that though Maji Safi Group’s outreach programs including the Disease Prevention Center all are excellent in his opinion- especially as someone who works with many malaria prevention initiatives, what Maji Safi Group needs to focus on, in all of their programs is sustainability. He stressed that in order to truly be perceived as effective, and change things in the district, as an organization Maji Safi Group “cannot just leave” (Machagge pers. comm. 2015).

Community Health Workers Community Health Workers (CHWs) spend the most time out of all the sample populations at the Disease Prevention Center, and therefore likely have the most in depth insight on what it realistically needs to improve it services, and effectiveness. CHWs opinions as a sample group did not vary too greatly though, perhaps due to the fact that they were all trained in the same manner by both Maji Safi Group and the World Health Organization’s PHAST (participant hygiene and sanitation training) methods to approach disease prevention in a particular style. Further, this specific outreach program has been around since 2012 and was on of the first three Maji Safi Group programs to be put in place, which could be another reason why the CHWs seemed to agree about its functionality and effectiveness in Shirati (Perel-Slater pers. comm. 2015). The below table lists the top five improvements CHWs mentioned for the center. The numbers of responses are rather minimal, this is because not every CHW responded to the question about Disease Prevention Center improvements.
Table 2. Community health workers’ suggestions for improvement of Maji Safi Group’s Disease Prevention Center. The top five responses to a question asked during the month of April 2015 in Shirati, TZ from eleven out of thirteen Maji Safi Group CHWs about potential improvements for Maji Safi Group’s Disease Prevention Center are shown above.

<table>
<thead>
<tr>
<th>Top 5 Disease Prevent Center improvements</th>
<th># of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Get a tent/permanent location</td>
<td>3</td>
</tr>
<tr>
<td>2 Have posters</td>
<td>2</td>
</tr>
<tr>
<td>3 Health screenings</td>
<td>2</td>
</tr>
<tr>
<td>4 Ceramic filters and WASH materials for demonstration</td>
<td>1</td>
</tr>
<tr>
<td>5 More centers</td>
<td>1</td>
</tr>
</tbody>
</table>

The first two responses about getting a tent and posters play into the fact that the center would look much more official if it were to be in the same location and actually broadcast its purpose for passersby. Perhaps if this were the case, the CHWs would have more contact minutes with hospital visitors. This suggestion also aligns with what the medical professionals mentioned. The third suggestion of providing health screenings alludes to the upcoming plan that will be implemented at the center in the very near future. A graduate student is going to work at the Disease Prevention Center and do certain health tests, looking for diseases (Perel-Slater pers. comm. 2015). This program will allow for visitors to get treatment if they have any health issues, as well as give Maji Safi Group more data points on public health to add to their records. If the practice of health screenings continues, or is implemented again very so often in the future, Maji Safi Group can compare the results of the latest health tests with data from this coming summer to gauge whether or not water-borne disease (and other diseases that the hospital center educates about) are changing over time. The fact that the CHWs suggested this practice as an improvement to the center, could be because they were educated by Maji Safi Group and are on board with this idea as they believe that data collection and offering these services are important to increase the center’s positive impact. The fourth suggestion the CHWs gave was to give demonstrations at the Disease Prevention Center on how to use a variety of WASH materials. WASH materials refer to items like ceramic filters, Waterguard, or hand washing tanks- any item used for hygiene or sanitation practices. The Disease Prevention Center demonstrated the use of these materials in previous years, and it seems as if the CHWs would like to bring these lessons back on occasions, as they were apparently seen as effective. If the center were to have a more permanent set-up or location, implementing this fourth suggestion would be made a lot easier. Finally, the CHWs too believe the center should be replicated in other locations and at other
health centers. This suggestion resurfaces the theme that the center is appreciated and looked at in a positive light by the CHWs, even if they have critiques and suggestions on how to make it function more smoothly and positively impact the health practices of Shirati.

*Center Visitors* Center visitors, though they may be enthusiastic about the lessons they learned and intend to change their daily habits to incorporate new hygienic, sanitation, and disease prevention practices, have factors in their lives that in reality, makes the implementation of lessons taught by CHWs not as easy as it may seem. For example, in order to boil water, villagers must have enough money to be able to purchase the extra firewood or coal to light a fire, which is often a difficulty for people of this region, and Tanzania in general, to afford. Further, Shirati and surrounding villages are very rural so even accessing WASH materials might be too much a challenge to obtain because of transportation. In fact, I asked visitors what the biggest challenges were towards implementation of disease prevention strategies. The top graph in the figure below depicts the results. Responses were multiple choice and more than one answer was allowed. 56% and 53% checked off that money and access to WASH materials respectively were the biggest challenges towards disease prevention practices.

With these difficulties in mind, my study’s questionnaire then asked what the Disease Prevention Center could do to be more effective in teaching people how to smoothly implement health and hygiene practices into their homes. 48% stated that the Disease Prevention Center should simply continue to educate people, and 27% repeated that sentiment except suggested that Maji Safi Group extends the education to further outreach locations. The below figure shows representations of both what center visitors see as challenges towards disease prevention, and suggestions they made for the Disease Prevention Center. Again, visitors were allowed to list multiple answers so percentages exceed 100%.
Figure 5. Center visitor personal disease prevention practice application limiting factors and suggestions for the Disease Prevention Center. From 113 Disease Prevention Center visitors who responded to this study’s questionnaire between April 13th and April 24th, 2015 at Shirati Hospital, the above two charts represent responses to two different questions. The top graph depicts the percentage of visitors that listed different challenges they face toward implementing different hygiene and sanitation practices, and the bottom chart shows the percentage of subject that gave different suggestions as to how to improve Maji Safi Group’s Disease Prevention Center. Visitors were allowed to freely respond to this question, and many had more than one response, so the percentages do not add up to 100%. These two graphs are shown together so comparisons can easily be drawn between what people are asking for or think the population needs from the Disease Prevention Center, and what are actual challenges for them preventing diseases in their lives.
The interesting thing about these responses is the dichotomy between the need for money and materials, and the response that the Disease Prevention Center only needs to continue education as it has been doing. Do visitors perceive the education provided to be enough to instigate behavioral change in disease prevention for them and their community? Or is the lack of personal resources going to trump the lessons taught by community health workers and disease prevention practices continue to fall to the wayside? There was plenty of evidence and statements I heard from visitors to the center stating “they have never used a proper latrine at home,” or “only boil the water they give their children to drink,” and after the lessons had given them awareness, they were going to change their habits. But some of these same visitors were also asking the Disease Prevention Center to provide free Waterguard (9% out of 113), or give out free WASH materials (13%). So although the Disease Prevention Center is trying to instill a value system that preventative health measures are worth it for families to take in order to prevent diseases, and even avoid more expensive hospital bills, the question of whether or not the Center is effective in changing population behaviors will always be a challenge to evaluate.

**Trends** It is worth noting that all three-sample populations listed further outreach and continuing education as part of their lists of improvements. Also, the Disease Prevention Center can always continue to change and improve in order to increase at least the perceived effectiveness the center has in increasing disease prevention practices, and therefore decreasing the rate of water-borne illnesses in Shirati. And Maji Safi Group intends on continuing to evaluate its programs as best as possible in order to pinpoint exactly what changes would progress their goal of “disease prevention and health promotion project that empowers communities in rural Tanzania to fight waterborne and water-related diseases” (Maji Safi Group, 2015).

Overall results from this study in particular show certain trends in opinions on the Disease Prevention Center. First, these results show that CHWs love and are proud of their jobs. Medical professionals recognize the need for Maji Safi Group to exist due to their lacking preventative medicine care at the hospital and appreciate the work done at the Disease Prevention Center, but understandably give more thought and attention to their work. Visitors appreciate the center and learn the lessons well. Intentions to change daily habits to include disease prevention practices exist - especially due to the fact visitors stop by the center on the way to or from the hospital,
when they or their family are personally being impacted by health issue. But the actual application of disease prevention strategies can be inhibited by poverty, access to WASH materials, or lack of education. This gap in education is the niche that Maji Safi Group is trying to fill, with one of their programs being the Disease Prevention Center. There are many positive views on the center and many requests for Maji Safi Group to extend their programs, but also many suggestions from all three sample populations of improvements such as a defined area for the center with advertising, or increasing outreach.
Limitations

- Center visitors were responding to the verbal questionnaires in the presence of the community health workers that just taught their lesson and had one on one conversation about personal hygiene practices, daily behaviors, and other personal topics, so the respondents might have felt pressured to answer the spoken survey in particular biased ways.

- Every community health worker has a different teaching style at the center, which might add variability to the lessons received by visitors. This could add variability to responses to questionnaires as well.

- Human error in counting responses on questionnaire might have had minimal effect on results.

- As I interviewed both the medical professional and community health worker study sample populations during their workday, there was incredible variability in the time I spent interviewing different subjects. Some I have up to an hour-long discussion with, whereas others only had about ten minutes to answer some questions before running off to the operating rooms for example. This was due to time constraints and other non-controllable factors. This variability may possibly have impacted the way I was able to analyze and compare data and information I obtained from interviews since some participants were able to elaborate their answers, while others were not.

- Community health workers knew I would be giving this completed study to their bosses, which might have inhibited some of their answers during their interviews.

- Translations from English to Kiswahili or Kiluo and vice-versa may have had an impact on meanings and connotations. For example, few understood the direct translation of “preventative medicine,” so I had to substitute “disease prevention” as an umbrella term in conversation. Further, some center visitors needed clarification on the questions being asked and the clarification given could have possibly swayed their responses.
Conclusion

To readdress the purpose of this study: the results found through interviews and questionnaires show that stakeholders in the Disease Prevention Center overall hold the center in high regards and respect. Although each sample population had suggestions for improving the center’s impact on increasing disease prevention practices in Shirati, it seemed as if all three study groups do indeed believe that the Disease Prevention Center is helping to increase the public health practices in Shirati.

One common theme that was gleaned from all three sample populations though despite the different types of methods used, is that they all agreed that change takes time—especially communal change over a subject as complex as public health. No matter the intervention approach, or education style towards increasing public health through disease prevention practices, there are traditions and limiting factors, such as money, access to WASH materials, or receptiveness towards health education that make the implementation of health behavioral changes difficult. Yet when an NGO like Maji Safi Group establishes themselves in a place like Shirati, uses a multi-faceted approach towards education, and utilizes strong change makers like their valued Community Health workers (CHWs) there is hope that a future with less water-borne illnesses in Shirati and the greater district will exist. But, as one of the doctors wisely stated, “projects come to Shirati all the time and fall out, Maji Safi Group must focus on sustainability” (Machagge pers. comm. 2015). This doctor went on to suggest that Maji Safi Group must continue to evaluate their programs and stick around in order to truly see the if the changes they are working towards creating in Shirati are successful, and be aware if they ever fail. If Maji Safi Group permanently remains committed to their goals and the practices they are currently implementing, then, as supported by the findings from this study, I believe the NGO will begin to see programs like the Disease Prevention Center, not only in perspective, but also in reality, truly beginning to change the hygienic, sanitation, and health practices of locals in Shirati for the better. Once this occurs, ideally the same effective education offered at the Disease Prevention Center will also be able to spread to the entire district, region, and perhaps even country to fill an unoccupied niche of health education and increase the knowledge about public health practices, which will hopefully translate into an increase of the physical well-being of the growing Tanzanian population.
Future Studies

- For a similar project to this, it would be interesting to dig deeply into the demographics of visitors and people that Maji Safi Group is educating.

- Research more into the role and reputation of the Maji Safi Community Health Workers in Shirati.

- Observe the role of short-term wazungu doctors working at Shirati Hospital.

- Research what Rorya District health officers do and how they could be more efficient or effective.

- Do an ISP on the island owned by Dr. Chacha in the middle of Lake Victoria… (birds, small scale development, fishermen, GIS the island, invasive grass islands…).
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Appendices

Appendix 1.
Sample doctor and nurse interview questions include and are not limited to:

• How long have you worked here? What is your job/specialty?
• What are your thoughts on Preventative Medicine?
• How do you see preventative medicine practices manifested in this hospital, or, if applicable, in your work?
• Have you ever visited the Disease Prevention Center or recommended it to your patients?
• What are your thoughts on the center? What do you think its effectiveness have been?
• What does the Disease Prevention Center do well?
• What could the Disease Prevention Center improve on?

Appendix 2.
Sample CHW interview questions include and are not limited to:

• How long have you worked for Maji Safi Group?
• What do you like about working here?
• What do your friends and family think about you working here?
• Do you feel like you are making a difference with your work in the Disease Prevention Center? Examples?
• Why do most people visit the center?
• What does the center do well?
• How has the center changed since it started?
• Do you think center visitors have the resources, time, and money to implement the disease prevention strategies you are teaching?
• If so, do you think patients implement the strategies?
• What do you think the Disease Prevention Center could do better?
• Do you find that medical staff supports the Disease Prevention Center and encourage their patients to visit?
• What do you think the future of the Disease Prevention Center looks like?
Appendix 3.
Patient/Visitor questionnaire:

1. Kwa nini leo umekuja katika kitu cha kuzuia magonjwa? (Why did you come to the Disease Prevention Center today?)
   - □ Mgonjwa hospitalini (Patient at hospital)
   - □ Kumwona mgonjwa (Visiting a patient)
   - □ Nilishauriwa na (Recommended by)
   - □ Naumwa (Recently sick)
   - □ Ndugu anaumwa (Family member was sick with)
   - □ Nyingine (Other)

2. Kabla ya hapa umewahi kuja katika kitu cha kuzuia magonjwa? (Have you used the Disease Prevention Center before?)
   - □ Ndiyo (yes) □ Hapana (no)
   a. Kama ndiyo, ni mara ngapi? (How many times?) ______

3. Je umeshawahi kushiriki katika programu yoyote ya kikundi kingine cha Maji Safi unachokifahamu? (Have you participated in any other Maji Safi Group programs that you know of?)
   - □ Ndiyo (yes) □ Hapana (no)

4. Je, kutokana na hili somo unapanga kutumia mafunzo haya katika maisha yako? (Do you plan to implement new disease prevention practices into your life on account of this lesson?)
   - □ Ndiyo (yes) □ Hapana (no)
   a. Kama Ndiyo ar Hapana tafadhali eleza (Please explain)

5. Ni matatizo gani mnayokumbana nayo mnapokuwa mmejifunza kuhusu kulinga magonjwa? (What are challenges towards implementing disease prevention strategies?)
   - □ Pesa (Money)
   - □ Muda (Time)
   - □ Ukosefu wa vifaa (Lack of access to necessary materials)
   - □ Nyingine (Other)

6. Zipi huduma au taarifa nyingine ambazo kitu cha kuzuia magonjwa kingeweza kutoa ambazo zingesadia katika kutekeleza mpango wa kuzuia magonjwa? (What additional services or information could the Disease Prevention Center provide that would be useful for the implementation of disease control practices?)

7. Je, utatumia tena kitu cha kuzuia Magonjwa? (Will you use the Disease Prevention Center again?)
   - □ Ndiyo (yes) □ Hapana (no)
   a. Kama ndiyo au hapana ni kwa nini (Why)?
Appendix 4.

Background on a Bias

Cholera is a diarrheal disease caused by a bacterial infection in the intestine. A patient with cholera will experience severe watery diarrhea and vomiting in more severe cases. If untreated the illness can kill within hours due to dehydration. Cholera is usually transmitted through fecally contaminated water and food, and is a major risk in places with inadequate sanitation and water access. Further, the incubation period for cholera is very short; ranging from two hours to five days, so the spread of the disease can be rapid, placing high population density areas under extreme risk of an outbreak as well (Global Task Force on Cholera Control, WHO, 2004).

The first case of cholera in 2015 in the Rorya district was confirmed on Friday, April 10th, and by Monday an outbreak was declared with the government reporting that there were fourteen cholera cases confirmed and in health centers. That is not to say that there were not more cases as many people lack knowledge about the illness or means to get to a health center. At least two markets were shut down. By Wednesday April 15th, the government was reporting thirty confirmed cases from seven different villages, with more trickling in, however twenty-five people were said to have recovered and been sent home (Perel-Slater pers. comm. 2015). After Maji Safi Group visited the hotbeds of the outbreak (See image below) there was further reason to doubt the numbers of sick people given by the government as many people were seen ill, and four people were reported to have died in just one of the villages infected, whilst the government was reporting three deaths only for all seven villages (Perel-Slater pers. comm. 2015). When people in power are reporting incorrect information, and not providing support and proper education for those affected, an already very real problem can spiral out of control, which is preposterous as cholera can be managed well if approached properly.

The treatment of cholera is simple: rehydration either with an oral rehydration solution or IV therapy. It is a tricky process because a person with cholera may lose up to twenty liters of water a day; however, with proper rehydration methods in place, cholera is entirely curable. What is difficult though, is controlling the spread of the disease. The stool and vomit of cholera patients is highly contagious, and contaminated water must be treated immediately (Global Task Force on Cholera Control, WHO, 2004).
This is one reason why public health awareness and disease prevention practices are particularly critical when it comes to tackling this disease.

Maji Safi Group created the above map of Rorya district of the Mara region in Tanzania. The majority of the cholera cases in 2015 were in the mid-eastern edge of the district in villages such as Utegi. Shirati on the other hand, is in the northwest peninsula of the district.